(FILE 'HOME' ENTERED AT 11:53:59 ON 12 JUN 2002)

FILE 'MEDLINE, AGRICOLA, CANCERLIT, SCISEARCH, CAPLUS, BIOSIS, MEDICONF'
ENTERED AT 11:54:07 ON 12 JUN 2002

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L1      1659511 S FIBROBLAST? OR EPIDER? OR SKIN OR DERMIS OR DERMAL
L2        85661 S L1 AND (GRAFT OR TRANSPLANT?)
L3         3666 S L2 AND ((EXTRACELULAR (S) MATRIX) OR DECORIN OR COLLAGEN OR
L4         3666 FOCUS L3 1-
                E MURPHY MICHAEL?/AU
                E MURPHY MIC?/AU
L5          126 S E30
L6            8 S L1 AND L5
L7            5 DUP REM L6 (3 DUPLICATES REMOVED)
L8            5 SORT L7 PY
L9            0 S L3 AND L8
L10           0 S L2 AND L8
L11          14 S L4 AND BIOENGINEE?
L12           9 DUP REM L11 (5 DUPLICATES REMOVED)
L13           9 SORT L12 PY
L14         165 S L2 AND (TISSUE (S) CONSTRUCT)
L15         100 DUP REM L14 (65 DUPLICATES REMOVED)
L16         100 FOCUS L15 1-

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L8   ANSWER 4 OF 5  CAPLUS  COPYRIGHT 2002 ACS
AN   2000:351643  CAPLUS
DN   132:331698
TI   Bioengineered tissue constructs and methods for producing and using them
SO   PCT Int. Appl., 68 pp.
     CODEN: PIXXD2
IN   Murphy, Michael P.; Ronfard, Vincent
AB   Cultured tissue constructs comprising cultured cells and endogenously
     produced extracellular matrix components without the requirement of
     exogenous matrix components or network support or scaffold members.  Some
     tissue constructs of the invention are comprised of multiple cell layers
     or more than one cell type.  The tissue constructs of the invention have
     morphol. features and functions similar to tissues and their strength
     makes them easily handleable.  Preferred cultured tissue constructs of the
     invention are prepd. in defined media, i.e., without the addn. of chem.
     undefined components.
     PATENT NO.         KIND  DATE           APPLICATION NO.  DATE
     ---------------    ----  --------       ---------------  --------
PI   WO 2000029553      A1    20000525       WO 1999-US27505  19991119
         W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
             DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL,
             PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US,
             UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,
             DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
             CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     EP 1131410         A1    20010912       EP 1999-962807   19991119
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
     BR 9915476         A     20020102       BR 1999-15476    19991119
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L4 3666 FOCUS L3 1-
E MURPHY MICHAEL?/AU
E MURPHY MIC?/AU
L5 126 S E30
L6 8 S L1 AND L5
L7 5 DUP REM L6 (3 DUPLICATES REMOVED)
L8 5 SORT L7 PY

=> d l8 4 all

L8 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2002 ACS
AN 2000:351643 CAPLUS
DN 132:331698
TI Bioengineered tissue constructs and methods for producing and using them
IN **Murphy, Michael P.**; Ronfard, Vincent
PA Organogenesis Inc., USA
SO PCT Int. Appl., 68 pp.
CODEN: PIXXD2
DT Patent
LA English
IC C12N005-06
CC 9-16 (Biochemical Methods)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000029553	A1	20000525	WO 1999-US27505	19991119
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1131410	A1	20010912	EP 1999-962807	19991119
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	BR 9915476	A	20020102	BR 1999-15476	19991119
PRAI	US 1998-109247P	P	19981119		
	US 1999-339632	A	19990624		
	WO 1999-US27505	W	19991119		

AB Cultured tissue constructs comprising cultured cells and endogenously produced extracellular matrix components without the requirement of exogenous matrix components or network support or scaffold members. Some tissue constructs of the invention are comprised of multiple cell layers or more than one cell type. The tissue constructs of the invention have morphol. features and functions similar to tissues and their strength makes them easily handleable. Preferred cultured tissue constructs of the invention are prepd. in defined media, i.e., without the addn. of chem. undefined components.

ST bioengineered tissue construct
IT Animal tissue
(Bioengineered; bioengineered tissue constructs and methods for producing and using them)
IT Laboratory ware
(Culture vessel; bioengineered tissue constructs and methods for producing and using them)
IT Membranes, nonbiological
(Porous; bioengineered tissue constructs and methods for producing and using them)
IT Animal cell
Animal tissue culture

Basement membrane
Culture media
Extracellular matrix
Fibril
Fibroblast
Intestine
Lung
Skin
Tendon
Umbilical cord
Urethra
(bioengineered tissue constructs and methods for producing and using them)

IT Collagens, biological studies
Decorins
Glycosaminoglycans, biological studies
Tenascins
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(bioengineered tissue constructs and methods for producing and using them)

IT Growth factors, animal
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(bioengineered tissue constructs and methods for producing and using them)

IT Hormones, animal, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(bioengineered tissue constructs and methods for producing and using them)

IT Peptides, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(bioengineered tissue constructs and methods for producing and using them)

IT Proteins, general, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(bioengineered tissue constructs and methods for producing and using them)

IT Gene
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(bioengineered tissue constructs and methods for producing and using them)

IT Eye
(cornea, epithelium; bioengineered tissue constructs and methods for producing and using them)

IT Eye
(cornea, stroma; bioengineered tissue constructs and methods for producing and using them)

IT **Skin**
(**dermis**, papilla; bioengineered tissue constructs and methods for producing and using them)

IT **Skin**
(**dermis**; bioengineered tissue constructs and methods for producing and using them)

IT **Skin**
(**epidermis**; bioengineered tissue constructs and methods for producing and using them)

IT Bladder
Esophagus
(epithelium; bioengineered tissue constructs and methods for producing and using them)

IT Hair
(follicles; bioengineered tissue constructs and methods for producing and using them)

IT **Skin**
(keratinocyte; bioengineered tissue constructs and methods for producing and using them)

IT Mouth
(mucosa, epithelium; bioengineered tissue constructs and methods for producing and using them)
IT Mouth
(mucosa; bioengineered tissue constructs and methods for producing and using them)
IT Penis
(prepuce, Neonate male; bioengineered tissue constructs and methods for producing and using them)
IT **Skin**
(stratum corneum; bioengineered tissue constructs and methods for producing and using them)
IT Collagens, biological studies
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(type I; bioengineered tissue constructs and methods for producing and using them)
IT Collagens, biological studies
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(type III; bioengineered tissue constructs and methods for producing and using them)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bell, E; US 5536656 A 1996
(2) Cohen; ANNALS OF BIOMEDICAL ENGINEERING 1991, V19(5), P600
(3) Organogenesis Inc; WO 9531473 A 1995 CAPLUS
(4) Takeda Chemical Industries; EP 0282746 A 1988 CAPLUS

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L4 3666 FOCUS L3 1-

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L4 ANSWER 4 OF 3666 CAPLUS COPYRIGHT 2002 ACS
AN 1990:104894 CAPLUS
DN 112:104894
TI **Epidermal graft** system containing **collagen**
-coated surgical dressing
SO PCT Int. Appl., 45 pp.
CODEN: PIXXD2
IN Brysk, Miriam M.
AB A **skin** autograft or allograft composite is prepd. by culturing **epidermal** cells in a medium low in Ca2+ which prevents cell differentiation, layering the cells on a sheet of **collagen** -coated pliable material such as a synthetic surgical dressing, inverting the sheet on a recipient, and allowing it to remain in position until **epidermal** cells attach to the recipient and facilitate the formation of a skinlike covering. Thus, 1 of the 2 polyethylene surface layers of a Vigilon polyethylene/hydrocolloid-type surgical dressing was removed and the dressing was coated with a **collagen** soln. and dried. Trypsin-dissocd. cells from human **epidermis** sections were cultured and subcultured to .apprx.75% confluence in MCBD-153 medium having a low Ca2+-concn. and seeded onto the **collagen**-coated surgical dressing; after 4-6 h, the dressing was inverted onto a wound.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 8903228	A1	19890420	WO 1988-US3602	19881014
W: AT, AU, BB, BG, BR, CH, DE, DK, FI, GB, HU, JP, KP, KR, LK, LU, MC, MG, MW, NL, NO, RO, SD, SE, SU				
RW: AT, BE, BJ, CF, CG, CH, CM, DE, FR, GA, GB, IT, LU, ML, MR, NL, SE, SN, TD, TG				
US 5015584	A	19910514	US 1988-153957	19880209
AU 8826259	A1	19890502	AU 1988-26259	19881014
US 5334527	A	19940802	US 1991-672840	19910321

L4 ANSWER 9 OF 3666 CAPLUS COPYRIGHT 2002 ACS
AN 1979:70310 CAPLUS
DN 90:70310
TI Mechanism of **skin graft** adherence: **collagen** , elastin, and fibrin interactions
SO Surg. Forum (1977), 28, 522-4
CODEN: SUFOAX; ISSN: 0071-8041
AU Tavis, Michael J.; Thornton, James W.; Harney, John H.; Danet, Richard T.; Woodroof, Aubrey; Bartlett, Robert H.
AB After 72 h of **graft** placement, **collagen grafts** demonstrated a mean adherence to exposed deep fascia on rats equiv. to that of **skin** autografts, and both of these were significantly more adherent than elastin **grafts**. Transmission electron micrographs of the **graft**-wound interface indicated a surface interaction between **collagen** in the **graft** and fibrin, and fibrin may be the binding protein in **graft** adherence. **Grafts** pretreated with heparin prior to placement showed a significant redn. in adherence, and similar results were obtained when fibrinolysin was applied to the surface of intact **grafts**. **Collagen**-specific fibrin binding was also demonstrated when **collagen** disks were exposed to 125I-labeled fibrinogen. The fibrinogen binding kinetics with both **collagen** and elastin closely correlated with in vivo adherence values. Thus, **grafts** are apparently bound to wounds during the initial 72 h of placement by fibrin, and this process may involve surface interactions between fibrin and **collagen** rather than elastin.

L4 ANSWER 10 OF 3666 CAPLUS COPYRIGHT 2002 ACS
AN 2000:90446 CAPLUS
DN 133:86409
TI Methods for the serum-free culture of keratinocytes and **transplantation** of **collagen**-GAG-based **skin** substitutes
SO Methods in Molecular Medicine (1999), 18(Tissue Engineering Methods and Protocols), 365-389
CODEN: MMMEFN
AU Boyce, Steven T.
AB This chapter describes specific techniques for prepn. and grafting to surgical wounds in athymic mice of cultured **skin** substitutes from **collagen**-glycosaminoglycan substrates populated with normal human keratinocytes, melanocytes, and **fibroblasts** grown in serum-free or low-serum conditions.

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L4         3666 FOCUS L3 1-
                E MURPHY MICHAEL?/AU
                E MURPHY MIC?/AU
L5          126 S E30
L6            8 S L1 AND L5
L7            5 DUP REM L6 (3 DUPLICATES REMOVED)
L8            5 SORT L7 PY
L9            0 S L3 AND L8
L10           0 S L2 AND L8
L11          14 S L4 AND BIOENGINEE?
L12           9 DUP REM L11 (5 DUPLICATES REMOVED)
L13           9 SORT L12 PY

=> d an ti so au ab pi l13 4 5

L13  ANSWER 4 OF 9     MEDLINE
AN   1998184226     MEDLINE
TI   Genetically modified human keratinocytes overexpressing PDGF-A enhance the
     performance of a composite skin graft.
SO   HUMAN GENE THERAPY, (1998 Mar 1) 9 (4) 529-39.
     Journal code: 9008950. ISSN: 1043-0342.
AU   Eming S A; Medalie D A; Tompkins R G; Yarmush M L; Morgan J R
AB   Skin loss due to burns and ulcers is a major medical problem.
     Bioengineered skin substitutes that use cultured
     keratinocytes as an epidermal layer with or without analogues of
     the dermis are one strategy for skin repair. However,
     none can achieve definitive wound closure, function, or cosmesis
     comparable to split-thickness autografts. Moreover, autograft donor sites,
     which require time to heal, may be limited or have attendant problems such
     as infection or functional/cosmetic deficiencies. To determine if the
     performance of composite skin grafts of keratinocytes
     on a dermal analogue could be enhanced, human keratinocytes were
     genetically modified to overexpress platelet-derived growth factor A chain
     (PDGF-A). Composite grafts of modified keratinocytes seeded onto
     acellular dermis, prepared from cryopreserved cadaver
     skin, secreted PDGF-AA protein in vitro [90 ng/graft
     (1.5 x 1.5 cm)/24 hr]. To test their performance in a wound healing model,
     composite grafts were transplanted to full-thickness
     excisional wounds on the back of athymic mice. PDGF-A grafts
     formed a stratified differentiated epidermis similar to control
     grafts. The acellular dermis was repopulated with host
     fibrovascular cells and by day 7, the PDGF-A grafts had
     significantly more cells in the dermis and increased staining
     for murine collagen types I and IV. At this early time point,
     wound contraction was also significantly inhibited in PDGF-A
     grafts versus control grafts. Thus, PDGF-A
     overexpression improves graft performance during the first
     critical week after transplantation.

L13  ANSWER 5 OF 9  CAPLUS  COPYRIGHT 2002 ACS
AN   1999:405070  CAPLUS
DN   131:63508
TI   Chondrocyte-like cells useful for tissue engineering and methods
SO   PCT Int. Appl., 31 pp.
     CODEN: PIXXD2
IN   Bhatnagar, Rajendra S.; Nicoll, Steven B.
AB   Fibroblast cells are treated with a chem. inhibitor of protein
     kinase C such as staurosporine, in conjunction with functionally hypoxic
     micromass culture so as to be induced into chondrogenic differentiation.
     Such fibroblast-derived, chondrocyte-like cells may be seeded
     onto three-dimensional polymer scaffolds for use in the repair of
     articular cartilage lesions, and thus can obviate the need for invasive
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techniques to harvest autologous chondrocytes from a limited supply of existing articular cartilage, or to avoid the need for obtaining allogeneic chondrocytes from non-biocompatible donor tissues.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9931221	A1	19990624	WO 1998-US25918	19981207
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6197586	B1	20010306	US 1998-204824	19981203
	CA 2313808	AA	19990624	CA 1998-2313808	19981207
	AU 9916296	A1	19990705	AU 1999-16296	19981207
	EP 1036161	A1	20000920	EP 1998-960780	19981207
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	US 2001005592	A1	20010628	US 2001-760629	20010116

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L5          126 S E30
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L14         165 S L2 AND (TISSUE (S) CONSTRUCT)
L15         100 DUP REM L14 (65 DUPLICATES REMOVED)
L16         100 FOCUS L15 1-
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L16 ANSWER 5 OF 100 CAPLUS COPYRIGHT 2002 ACS
AN 2002:391853 CAPLUS
TI Engineered tissues from hair follicle derived mesenchymal stem cells and their usage for **transplants** and screening
SO PCT Int. Appl., 16 pp.
CODEN: PIXXD2
IN Daig, Rosemarie
AB The invention relates to cell **constructs** contg. a polymer matrix and mesenchymal stem cells from hair follicles or connective **tissue** cells derivable therefrom, in addn. to methods for the prodn. of the cell **constructs** and their usage as **transplant tissues**, for assays and drug screening. Hair follicles from plucked hair were cleaned in penicillin/streptomycin soln. and transfered to a Matrigel for adhesion and culturing in a DMEM medium that was complemented with IGF-1, FCS, retinoic acid, hydrocortisone, aminon acids, transferrin, selenium pyruvate, glucagon and bFGF. Mesenchymal stem cells were isolated by immunomagnetic sepn. using antibodies to CD13, CD49e, CD29, CD105 and smooth-muscle-alpha-actin; also a neg. selection was performed with anti CD24 and cytokeratin 16 antibodies. The selected mesenchymal stem cells were used on various matrixes, as collagen, alginate, fibrin, fat cells and cartilage for tissue culturing.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002040645	A2	20020523	WO 2001-EP12852	20011107

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

L16 ANSWER 7 OF 100 CAPLUS COPYRIGHT 2002 ACS
AN 1999:672498 CAPLUS
DN 131:291339
TI Vascularizable biomaterials for creation of three-dimensional tissues
SO PCT Int. Appl., 52 pp.
CODEN: PIXXD2
IN Halberstadt, Craig R.; Holder, Walter D., Jr.
AB A method of providing a vascularized, three-dimensional tissue in a living subject is disclosed. The method includes the steps of (a) creating, from a biocompatible material capable of supporting cell adhesion, growth, and

migration, a porous **construct** contg. cells to be **transplanted**, and (b) delivering the **construct** into an area of interest in the living subject to form a vascularized three-dimensional **tissue**. The preferred construct has a dimension in which it is about 50 .mu.mm to about 500 .mu.mm from the outermost surface to the center of the construct. The preferred construct also has an interconnected porous structure having a pore size of from about 10 .mu.mm to no greater than 300 .mu.mm. The cells within the preferred construct are no greater than 250 .mu.mm from an outer surface of the construct.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9952356	A1	19991021	WO 1999-US7816	19990409
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2330104	AA	19991021	CA 1999-2330104	19990409
	AU 9935520	A1	19991101	AU 1999-35520	19990409
	EP 1069822	A1	20010124	EP 1999-917384	19990409
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002511284	T2	20020416	JP 2000-542979	19990409

L16 ANSWER 9 OF 100 MEDLINE
AN 2001676206 MEDLINE
TI Tissue-engineered **skin**. Current status in wound healing.
SO Am J Clin Dermatol, (2001) 2 (5) 305-13. Ref: 64
Journal code: 100895290. ISSN: 1175-0561.
AU Bello Y M; Falabella A F; Eaglstein W H
AB **Tissue**-engineered **skin** is a significant advance in the field of wound healing and was developed due to limitations associated with the use of autografts. These limitations include the creation of a donor site which is at risk of developing pain, scarring, infection and/or slow healing. A number of products are commercially available and many others are in development. Cultured **epidermal** autografts can provide permanent coverage of large area from a **skin** biopsy. However, 3 weeks are needed for **graft** cultivation. Cultured **epidermal** allografts are available immediately and no biopsy is necessary. They can be cryopreserved and banked, but are not currently commercially available. A nonliving allogeneic acellular **dermal** matrix with intact basement membrane complex (Alloderm) is immunologically inert. It prepares the wound bed for grafting allowing improved cultured allograft 'take' and provides an intact basement membrane. A nonliving extracellular matrix of collagen and chondroitin-6-sulfate with silicone backing (Integra) serves to generate neodermis. A collagen and glycosaminoglycan **dermal** matrix inoculated with autologous **fibroblasts** and keratinocytes has been investigated but is not commercially available. It requires 3 to 4 weeks for cultivation. Dermagraft consists of living allogeneic **dermal** **fibroblasts** grown on degradable scaffold. It has good resistance to tearing. An extracellular matrix generated by allogeneic human **dermal** **fibroblasts** (TransCyte) serves as a matrix for neodermis generation. Apligraf is a living allogeneic bilayered **construct** containing keratinocytes, **fibroblasts** and bovine type I collagen. It can be used on an outpatient basis and avoids the need for a donor site wound. Another living **skin** equivalent, composite cultured **skin** (OrCel), consists of allogeneic **fibroblasts** and keratinocytes seeded on opposite sides of bilayered matrix of bovine collagen. There are limited clinical data available for this product, but large clinical trials are ongoing. Limited data are also available for 2 types of dressing material derived from pigs: porcine small intestinal submucosa acellular collagen matrix (Oasis) and an acellular xenogeneic collagen matrix (E-Z-Derm). Both products have a long shelf life. Other novel **skin** substitutes are being

investigated. The potential risks and benefits of using **tissue** -engineered **skin** need to be further evaluated in clinical trials but it is obvious that they offer a new option for the treatment of wounds.

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